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09/755,243	01/05/2001	Corrado P. Dragone	68	3757
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EXAMINER				
KANG, JULIANA K				
ART UNIT			PAPER NUMBER	
2874				

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,243

Applicant(s)

DRAGONE, CORRADO P.

Examiner

Juliana K. Kang

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-12 and 15-27 is/are rejected.
- 7) ☐ Claim(s) 5, 6, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1103.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1-26 are objected to because of the following informalities:
2. Claim 1 recites the limitation "two output waveguides" in line 12. Further along the claim, it appears that the two output waveguides are referred as a first output waveguide (line 19) and the second waveguide (line 24, at least it appears that the second waveguide is referring to the one of the two output waveguides). If this interpretation is correct, it would make the claim clearer if the recited limitation "two output waveguides" is amended to read "a first and second output waveguides, "a first output waveguide" to "the first output waveguide" and "the second waveguide (in line24)" to "the second output waveguide."
3. Claim 2 recites the limitation "a central imaging arm" in line 3. This limitation is already recited in claim 1. Thus, it needs to be corrected to read "the central imaging arm."
4. There is a typographical error in claim 11 in line 2. The term "stoband" should be corrected to "stopband."
5. Claim 27 recites the limitation "the first output waveguide" in lines 20 and 21. There is insufficient antecedent basis for this limitation in the claim.
6. Appropriate corrections are required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 15-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claims 15-22 recites the limitation of the claimed optical switch apparatus used in an optical switching arrangement. However, the claims do not clearly recite the structural connection between the previously recited optical switch apparatus and the rest of the optical switching arrangement. It is not clearly to the Examiner how the claimed optical apparatus is connected to the dilated crossbar arrangement or dilated Clos switching arrangement.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. Claim 27 is rejected under 35 U.S.C. 102(a) as being anticipated by Doerr (U.S. Patent 6,049,640).

12. Regarding claim 27, Doerr discloses a method of operating an optical switching apparatus comprising the a first and second star couplers (112, 122) having at least three imaging waveguide arms connected therebetween; the method comprising the steps of adjusting the phase of an optical signal in at least two of the three imaging arms to maximize power transfer from the input waveguide to the first output waveguide (see column 6 lines 55-67 and column 7 lines 1-21). Since Doerr includes controllable phase shifters for each imaging waveguide arms, the recited limitation of the difference between the power transferred being within a predetermined maximum value is inherently met by Doerr.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1-4, 7-12 and 15-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr.

15. Regarding claims 1-4, 7, 8, 12 and 24-26, Doerr discloses an optical switching apparatus comprising a first and second couplers (110, 120) having imaging waveguide arms connected therebetween (three imaging waveguide arms for each wavelength [see column 5 lines 54-58]); the first coupler including at least one input (150) connected as an input waveguide of the switching apparatus and outputs (130) connected to the imaging arms; the second coupler is a star coupler consisting of a first

and second radial array (130, 160) separated by a slab waveguide (122, 121); the imaging arms being connected to central waveguides of the first radial array, and central waveguides of the second radial array being connected to two output waveguides (160) of the switching apparatus; the imaging arms include phase shifters to control optical path lengths (see column 55-57) to select the output ports for the signal entered through the input waveguide (see column 5 lines 65 to column 6 lines 6). Doerr does not specifically discuss the spacing between the waveguides. Doerr teaches outputting the input signal to only one of the output port (the first output waveguide, see column 7 lines 7-10), thus Doerr's structure inherently meet the claimed spacing to either minimize or maximize power transfer to one of the output waveguide. However, Doerr does not specifically teach that the difference between the combined power transferred to the top and bottom imaging arms and the power transferred to the central imaging arm being within a predetermined value. Any value can be a predetermined value. Since Doerr teaches controllable phase shifters for each imaging arm, it would have been obvious to one with ordinary skill in the art to obtain any value including the claimed limitation of having the predetermined value by adjust the phase shifters in order to obtain the best result. Doerr shows additional waveguides that straddle the waveguides (see Fig. 1).

16. Regarding claims 9-11, Doerr essentially teaches the claimed structure including the controllable phase shifters in order to output the input signal to only one of the output ports, thus, the claimed limitations are met by Doerr.

17. Regarding claim 12, Doerr teaches that the apparatus is symmetrical about the middle line (see column 6 lines 7-8) thus, the reversed optical transmission would work equally well in Doerr.

18. Regarding claims 15-23 (as best understood by the Examiner with the 112 rejections discussed above), usually an optical communication system includes connection of many small optical switching apparatuses. Thus, even though Doerr does not specifically teach that the switching apparatus is used in another bigger system, it would have been obvious to one with ordinary skill in the art to use the Doerr's switching apparatus as a part of a known optical communication system such as dilated crossbar arrangement, and Clos switching arrangement in order to process the optical signals in many different ways.

Allowable Subject Matter

19. Claims 5, 6, 13, and 14, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter: Regarding claims 5 and 6, the closest prior art of record, Doerr, fails to teach the claimed structure of the second coupler as set forth in claim 5.

21. Regarding claims 13 and 14, the closest prior art of record, Doerr, fails to teach the claimed optical switching apparatuses blocking the active paths of a dilated switching arrangement as set forth in claim 13.

Conclusion

22. The prior art documents submitted by applicant have been considered and made of record (note the attached copy of form PTO-1449).

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (703) 305-6259. The examiner can normally be reached on Mondays and Thursdays 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (703) 308-4819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-3072.


Juliana Kang
November 24, 2003